

FIG. 1A

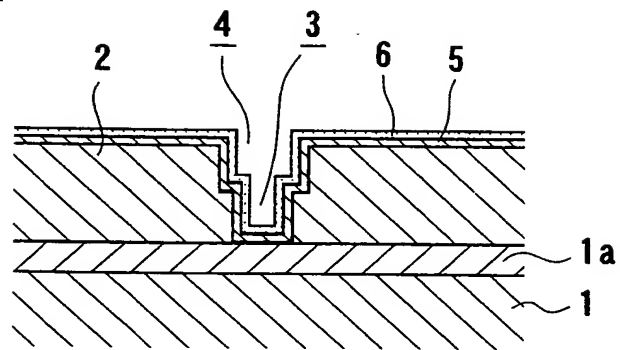


FIG. 1B

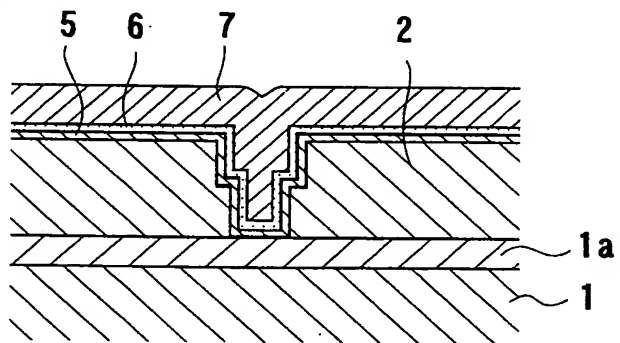
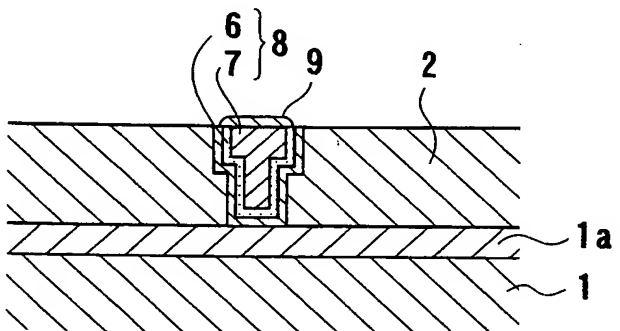


FIG. 1C



2/27

FIG. 2

relationship between pH of plating liquid and electroless Ni-B plating rate, and between pH of plating liquid and B content of plating film (pH adjusted with ammonia water)

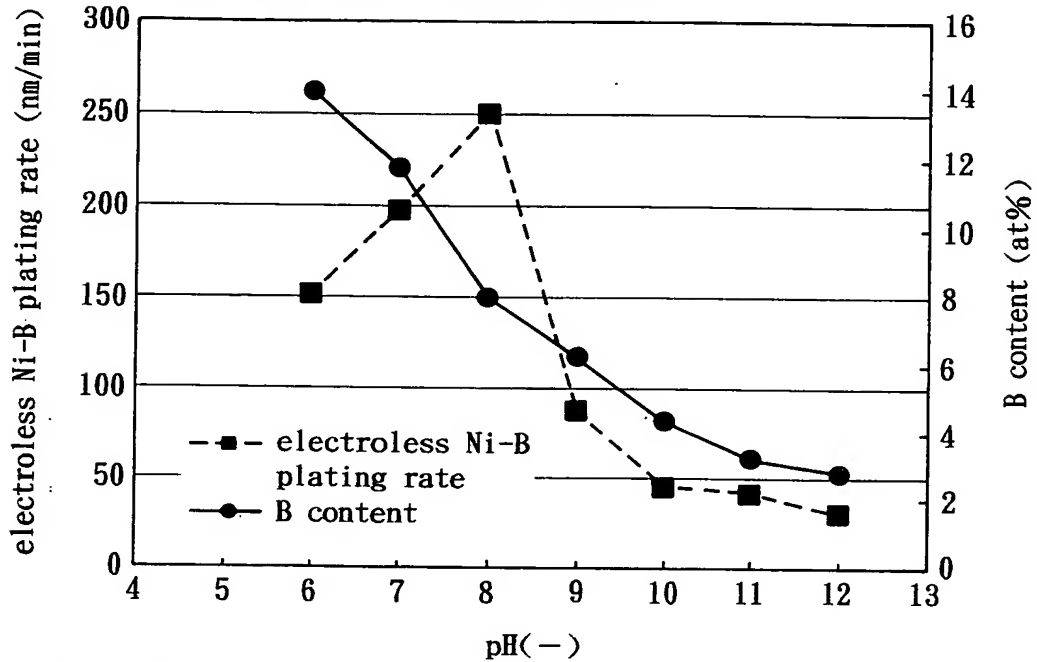
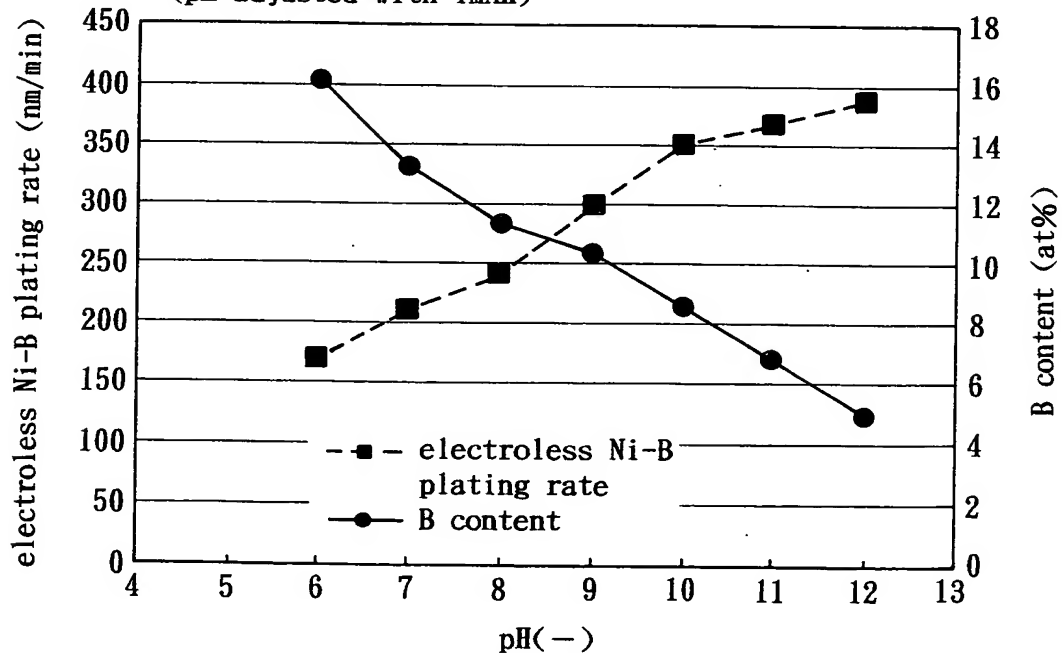


FIG. 3

relationship between pH of plating liquid and electroless Ni-B plating rate, and between pH of plating liquid and B content of plating film (pH adjusted with TMAH)



3/27

X-ray diffractometry

Ni-B/Ag/Cu/TiN
ag depo

incidence angle for thin film 5°
CuK α $\lambda = 1.54\text{\AA}$

FIG. 4A

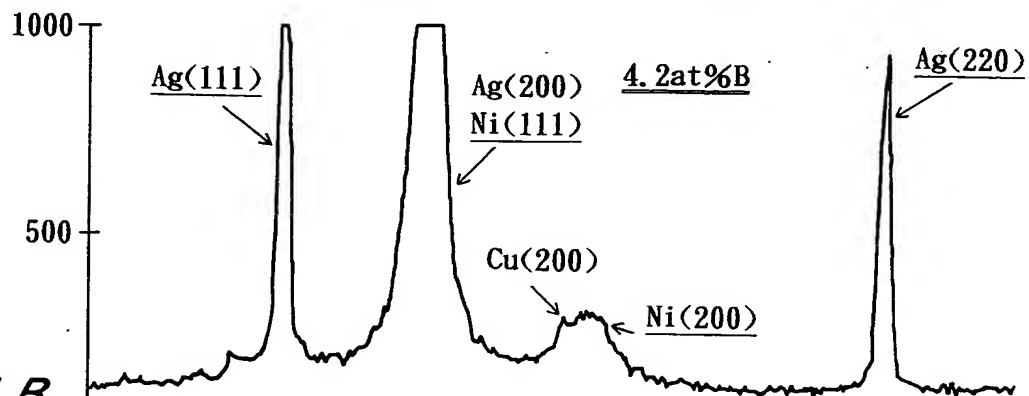


FIG. 4B

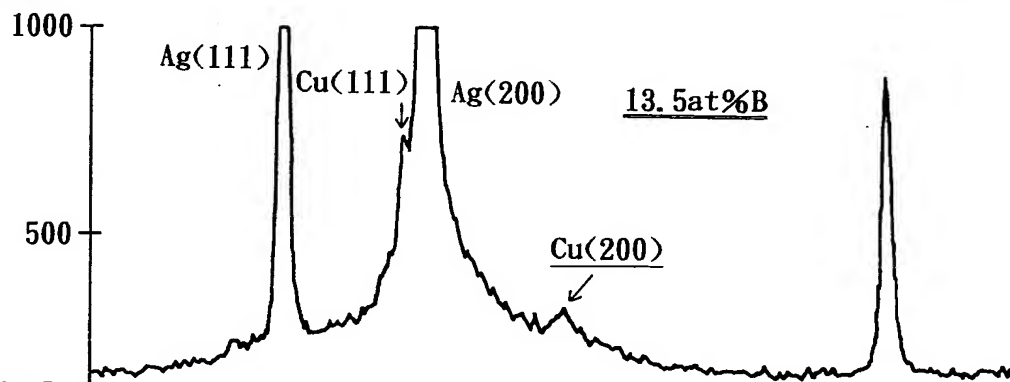
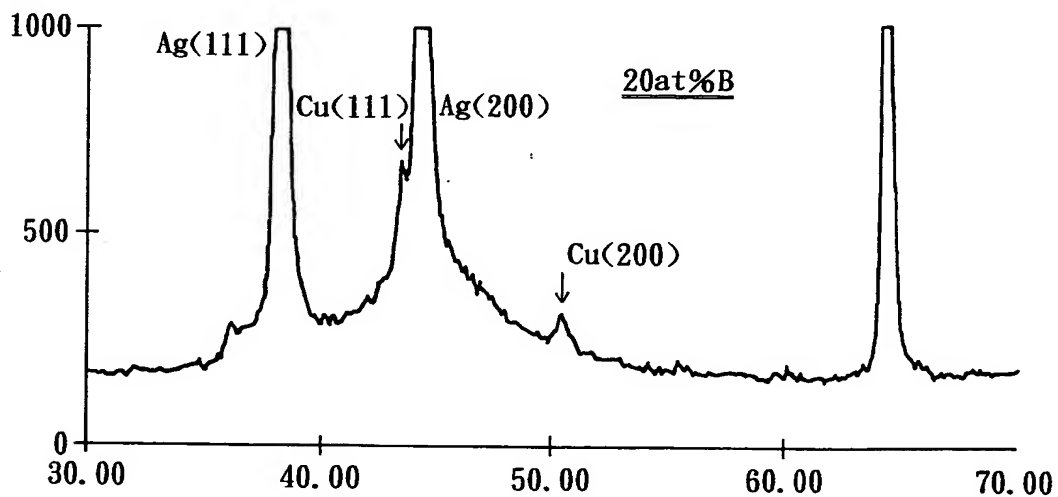


FIG. 4C



4/27

X-ray diffractometry

Ni-B/Ag/Cu/TiN

incidence angle for thin film 5°

annealed for 50min
in Ar at 573K

CuK α $\lambda = 1.54\text{\AA}$

FIG. 5A

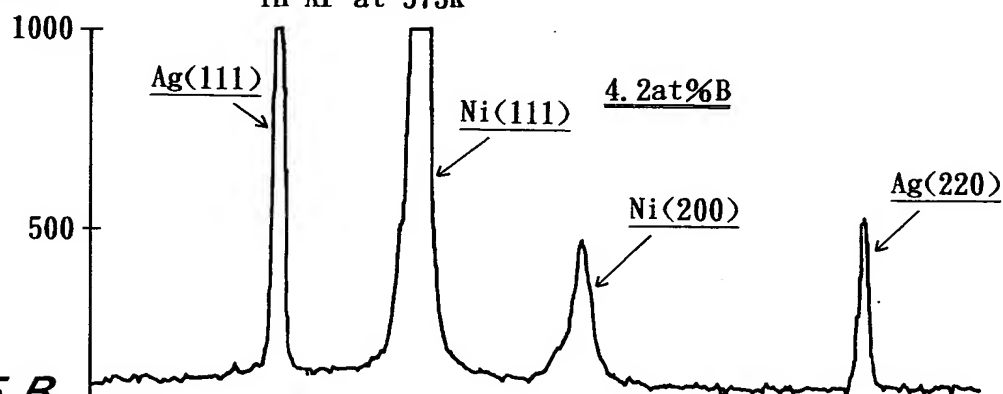


FIG. 5B

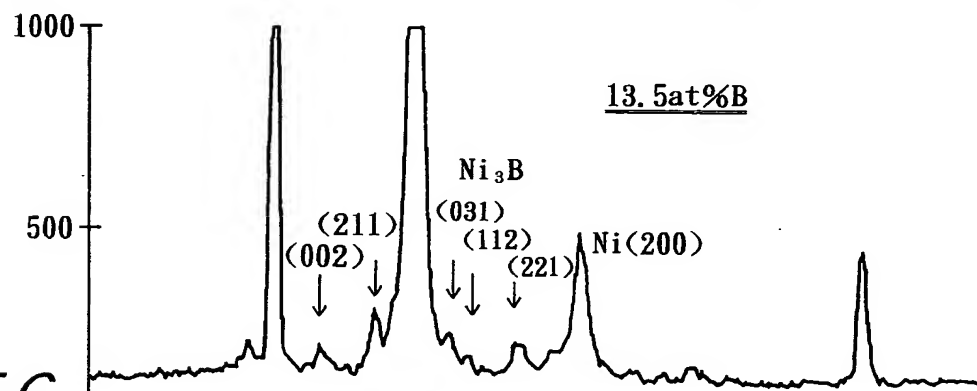
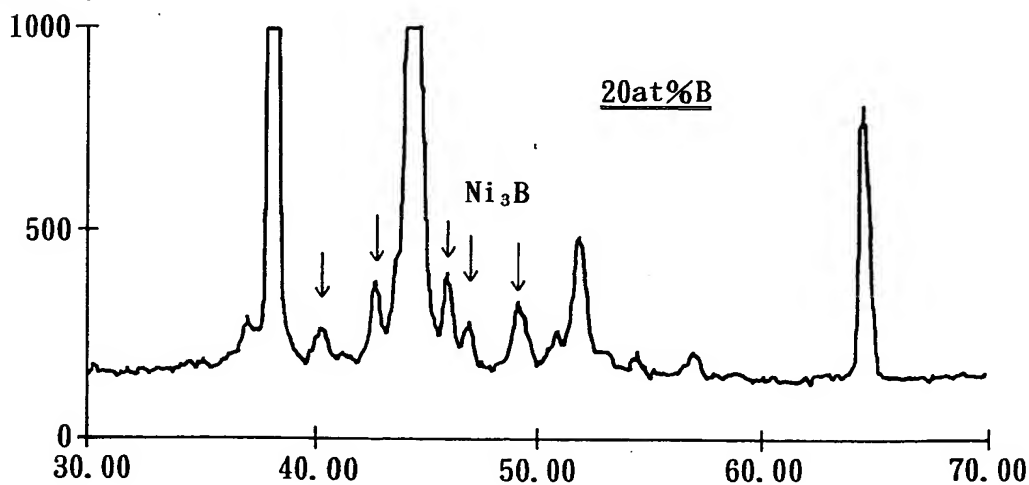


FIG. 5C



5/27

FIG. 6A

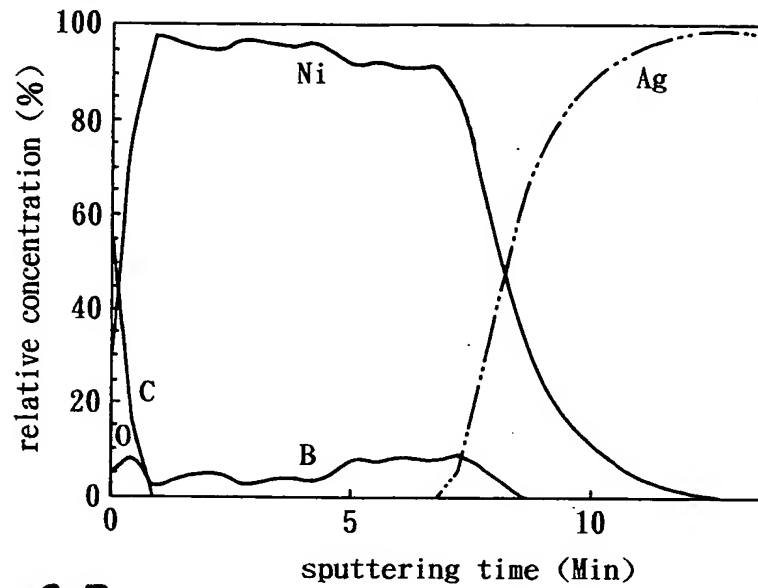


FIG. 6B

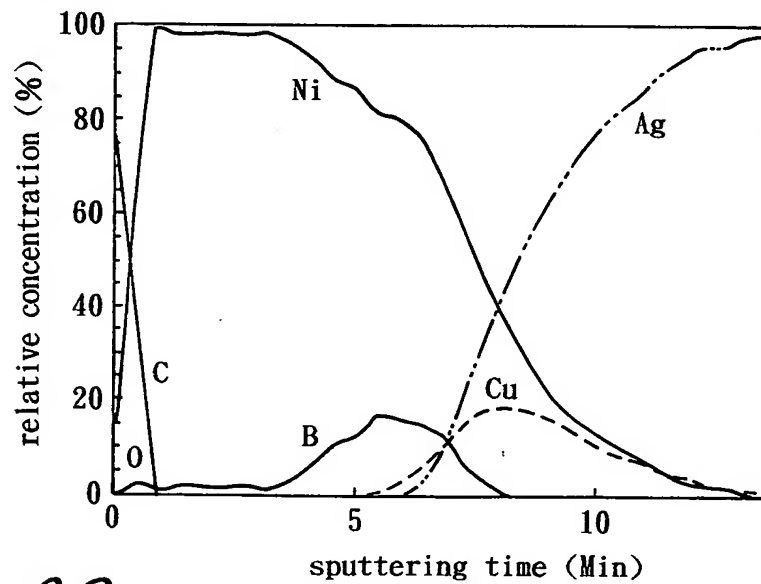
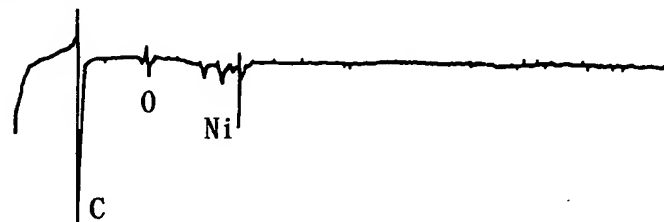


FIG. 6C



6/27

FIG. 7A

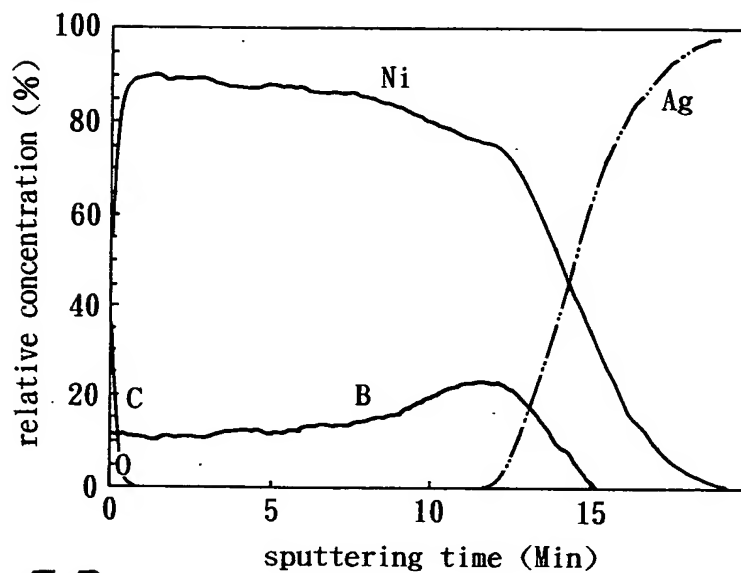


FIG. 7B

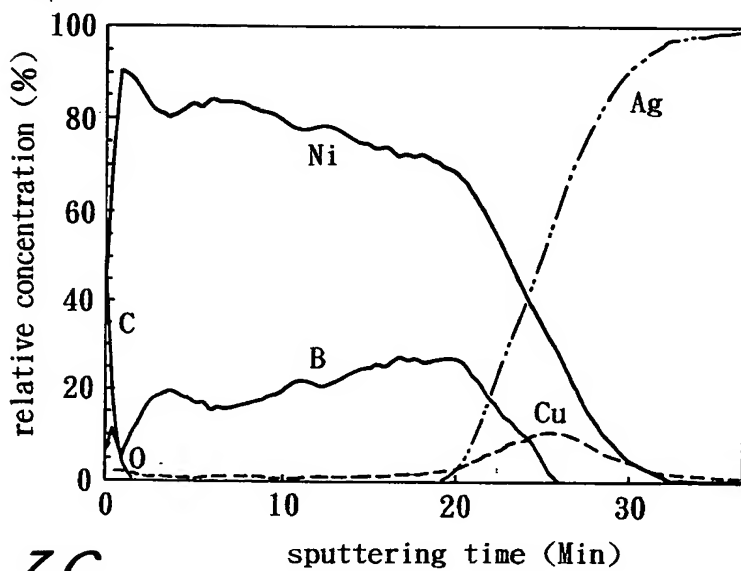
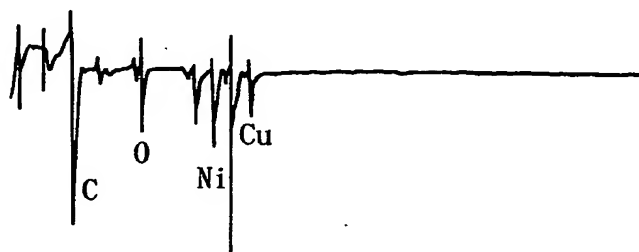


FIG. 7C



7/27

FIG. 8

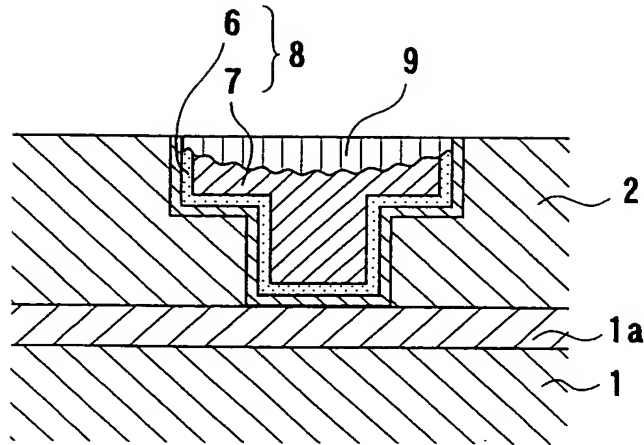
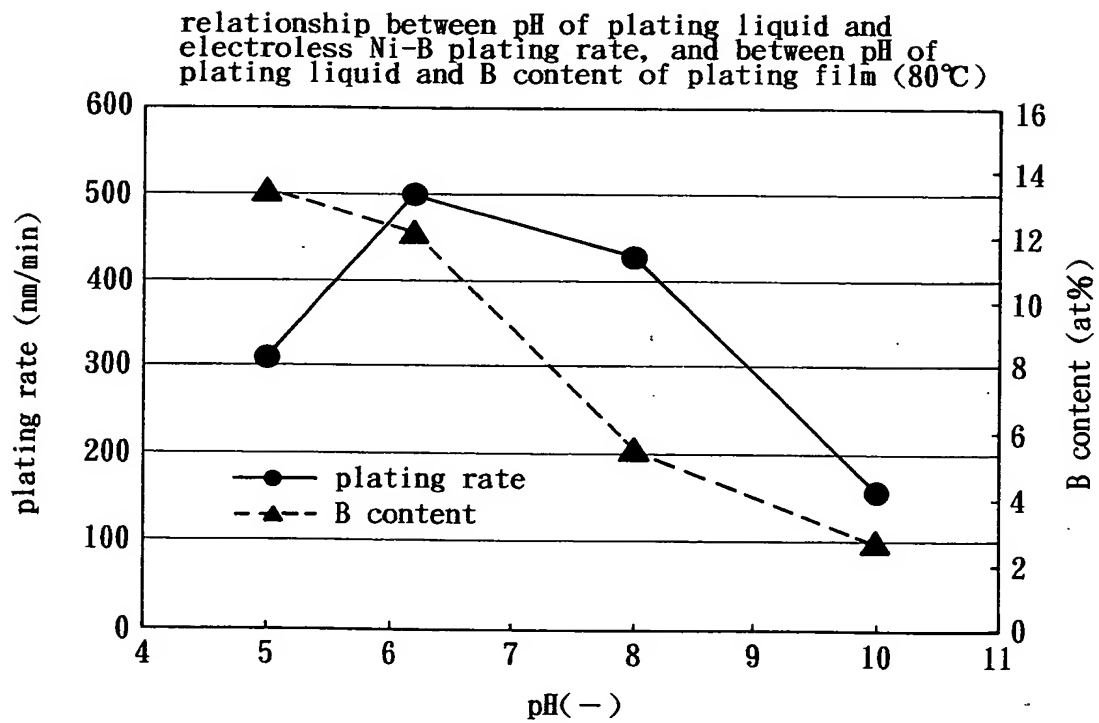


FIG. 9



8/27

FIG. 10

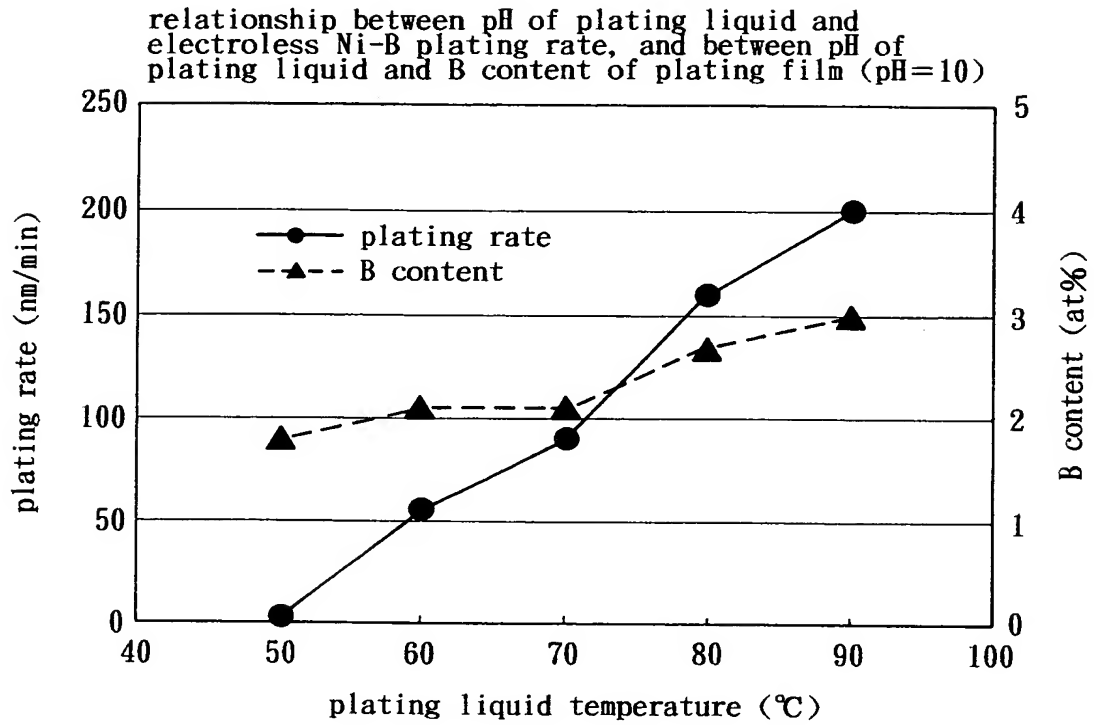


FIG. 11A

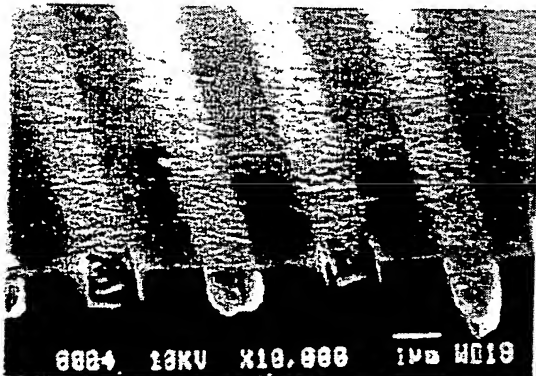
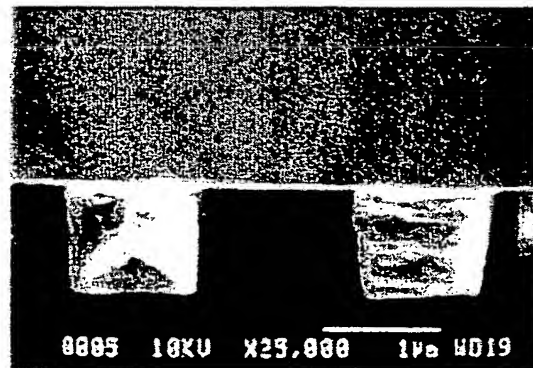


FIG. 11B



9/27

FIG. 12A

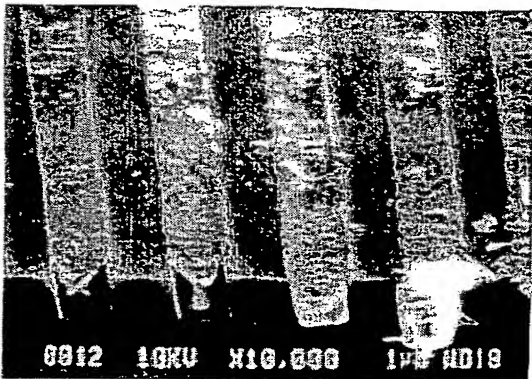


FIG. 12B



FIG. 13

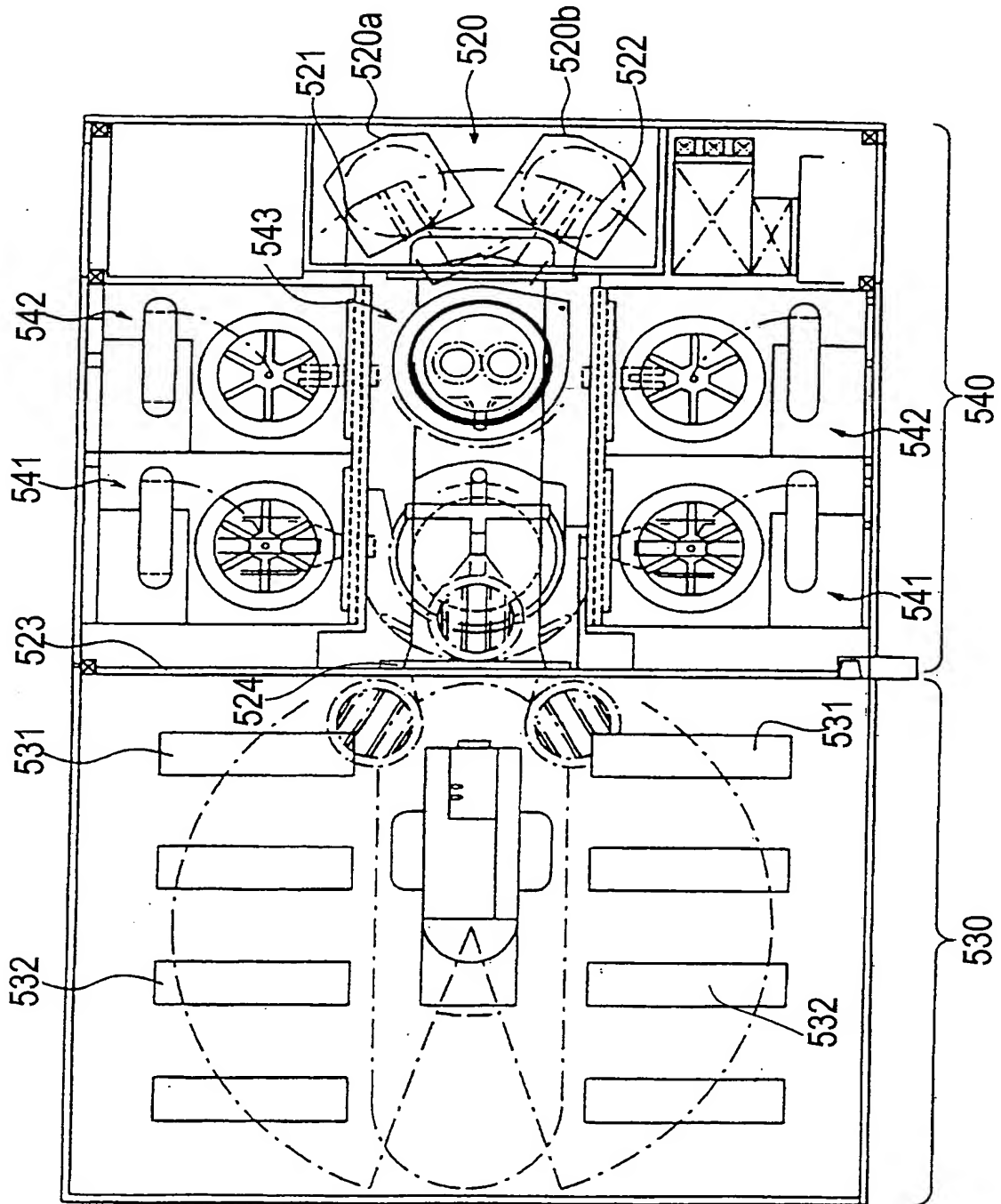
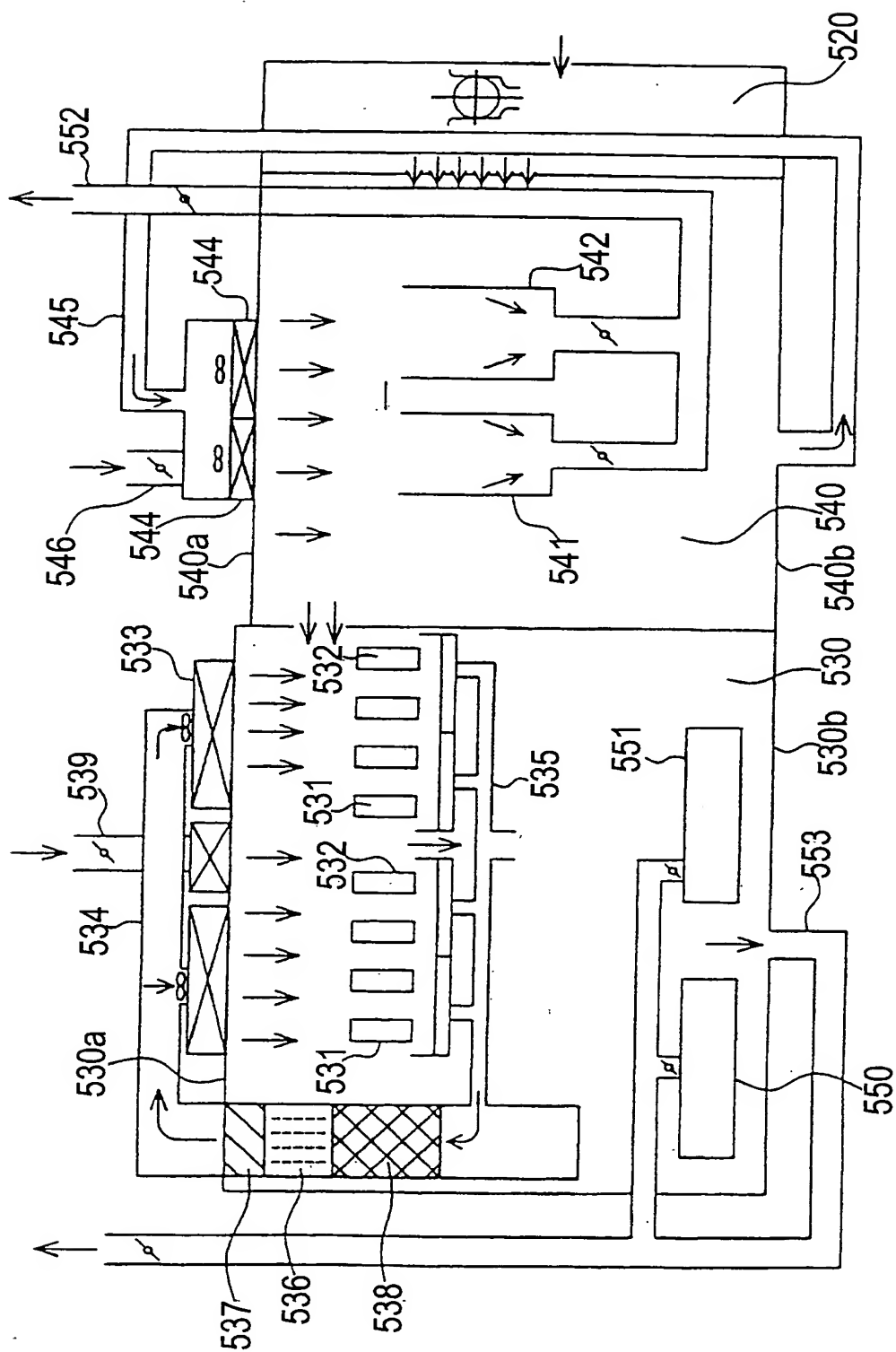


FIG. 14

11/27



12/27

FIG. 15

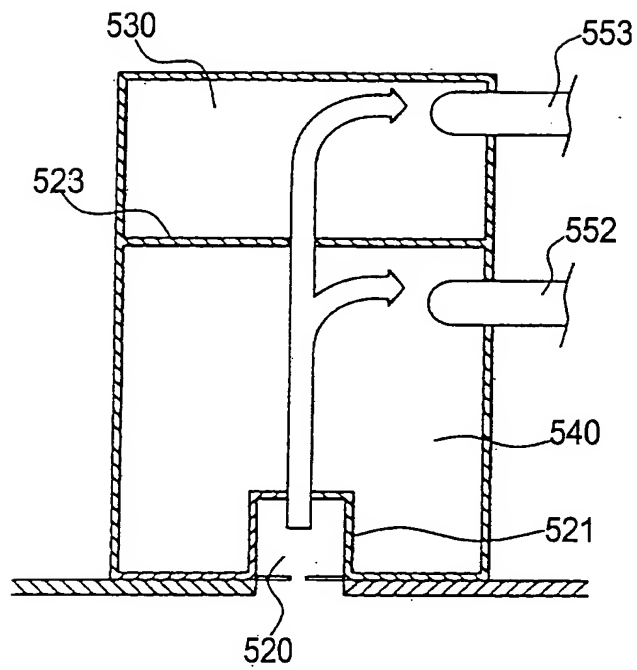


FIG. 16

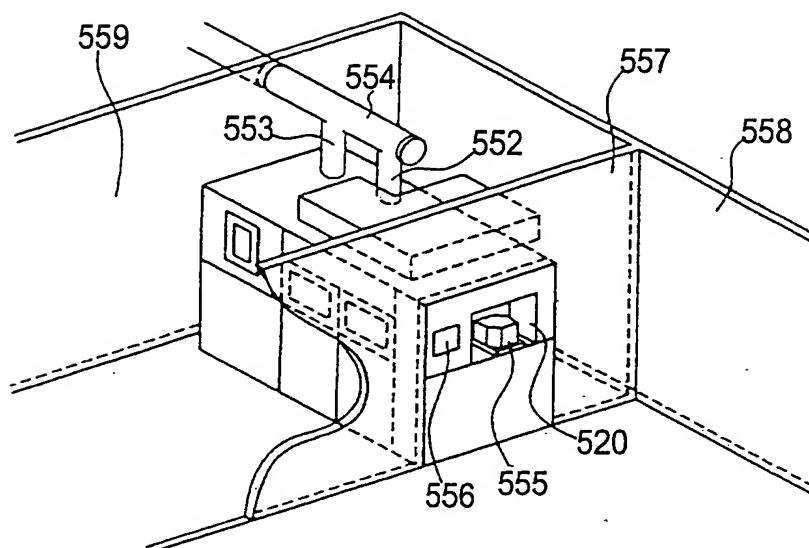


FIG. 17

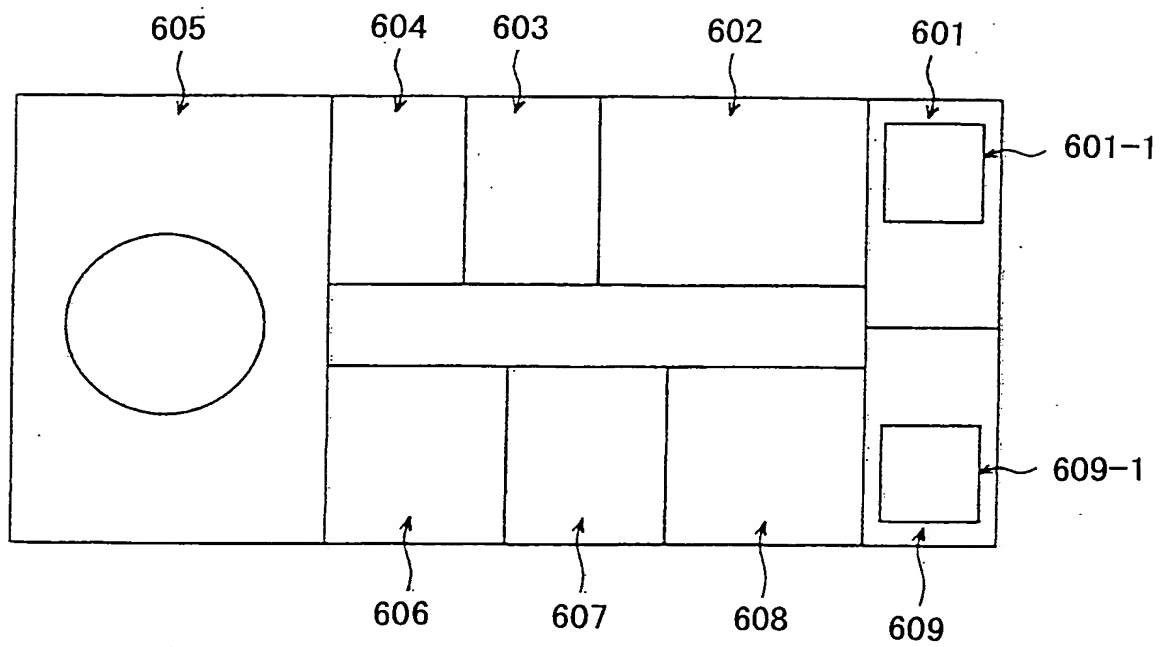


FIG. 18

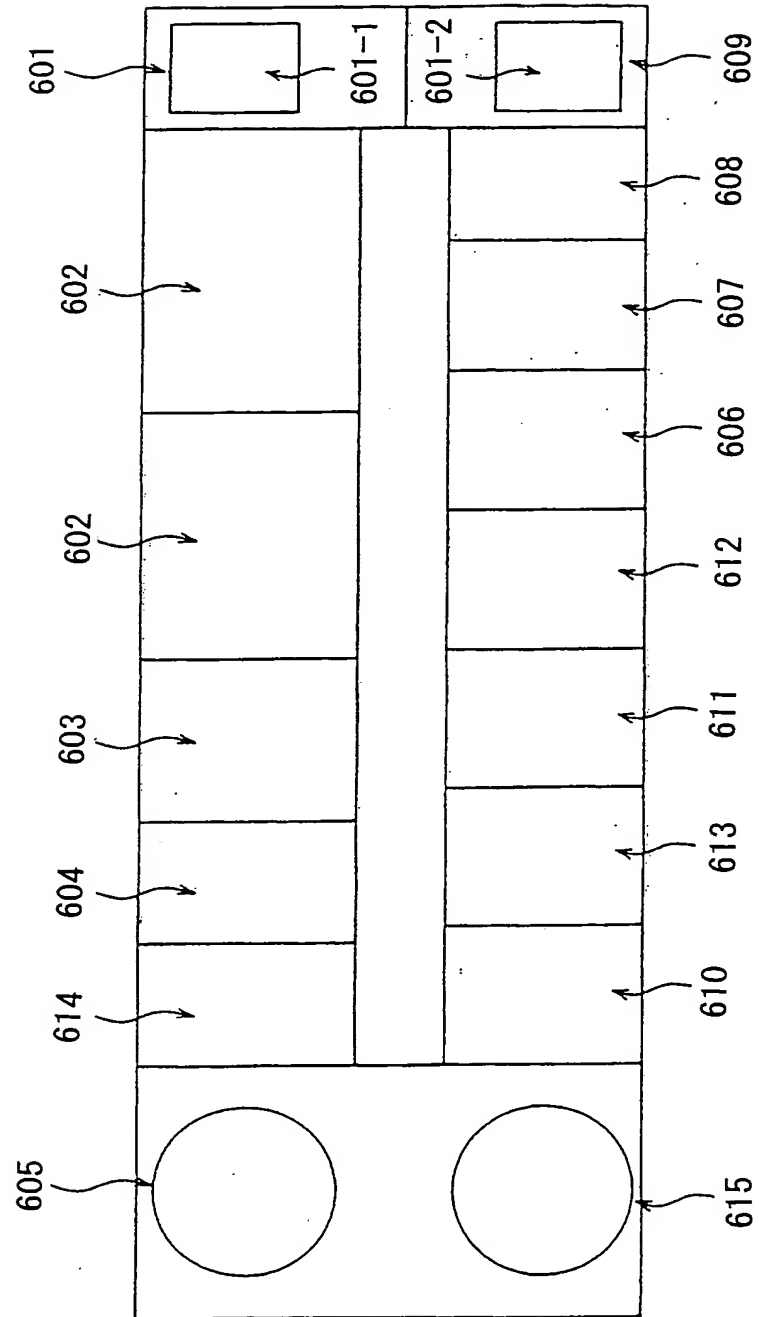


FIG. 19

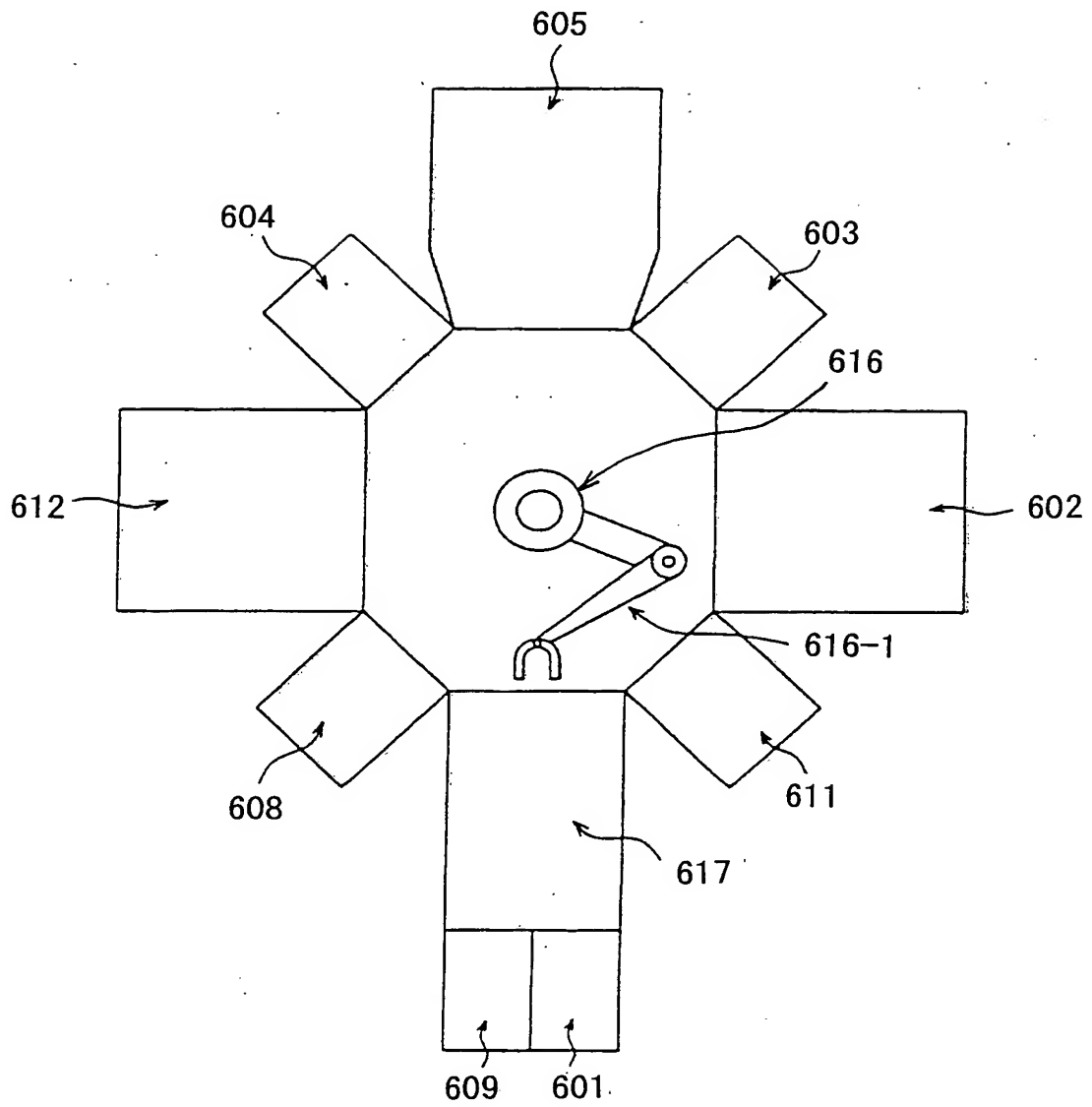


FIG. 20

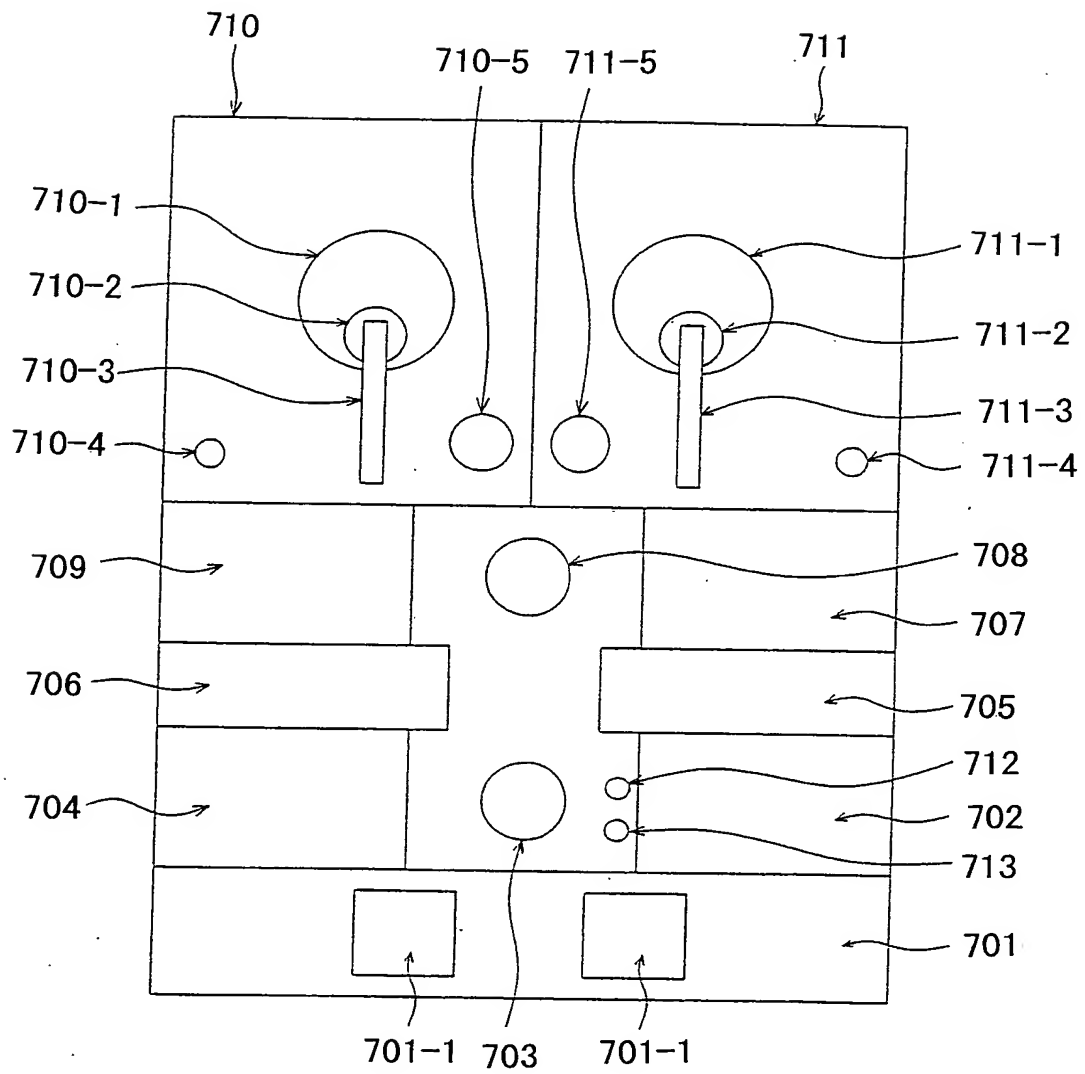


FIG. 21

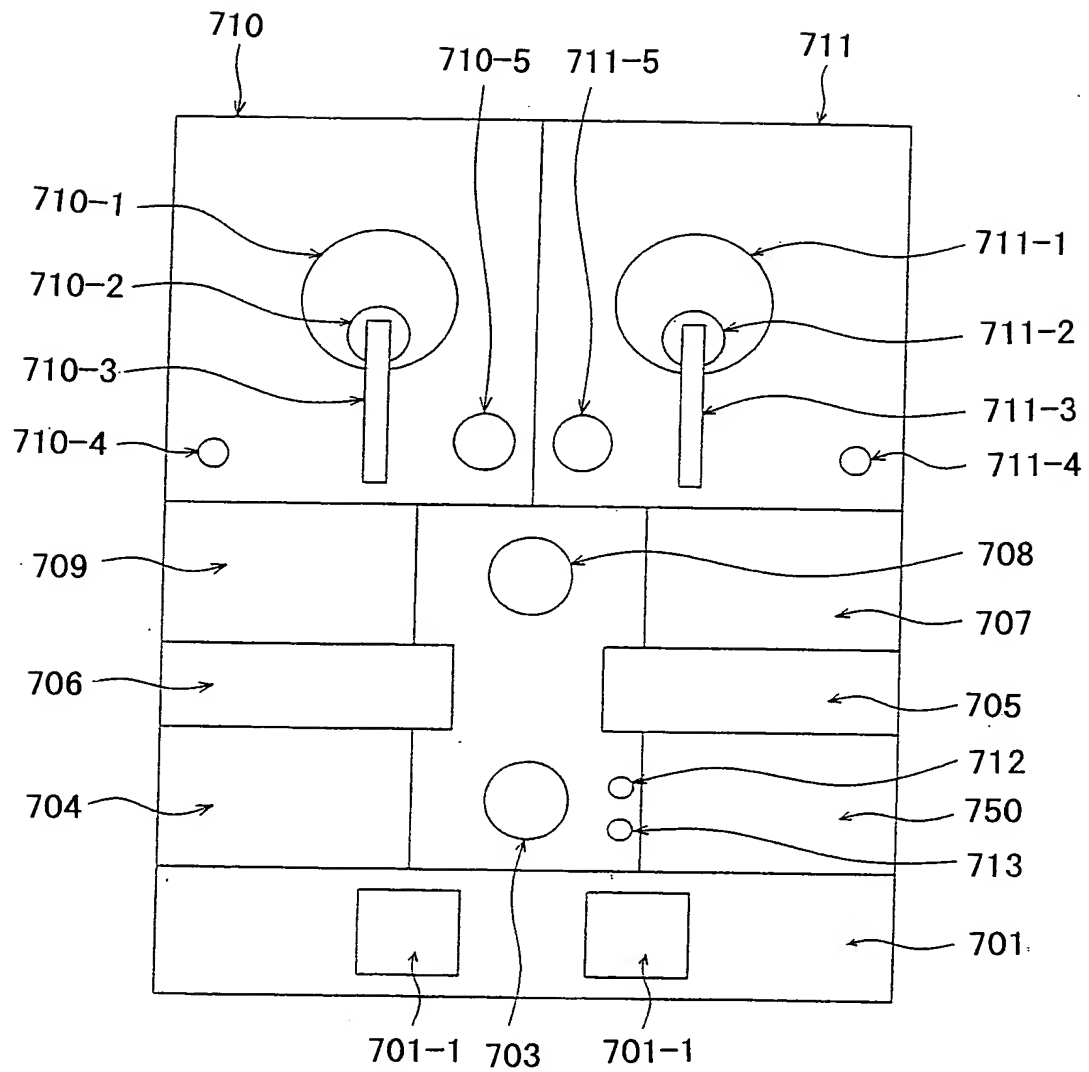


FIG. 22

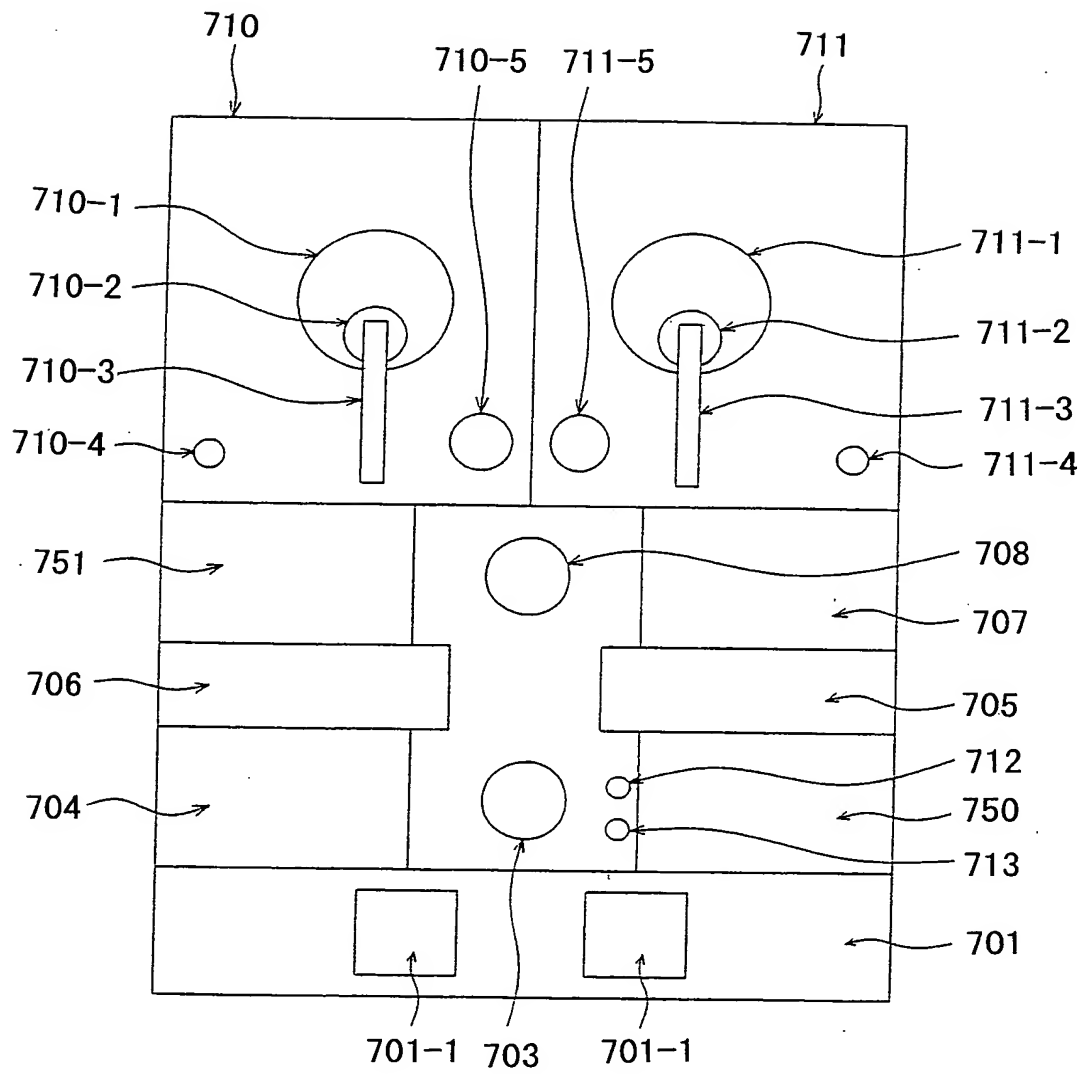


FIG. 23

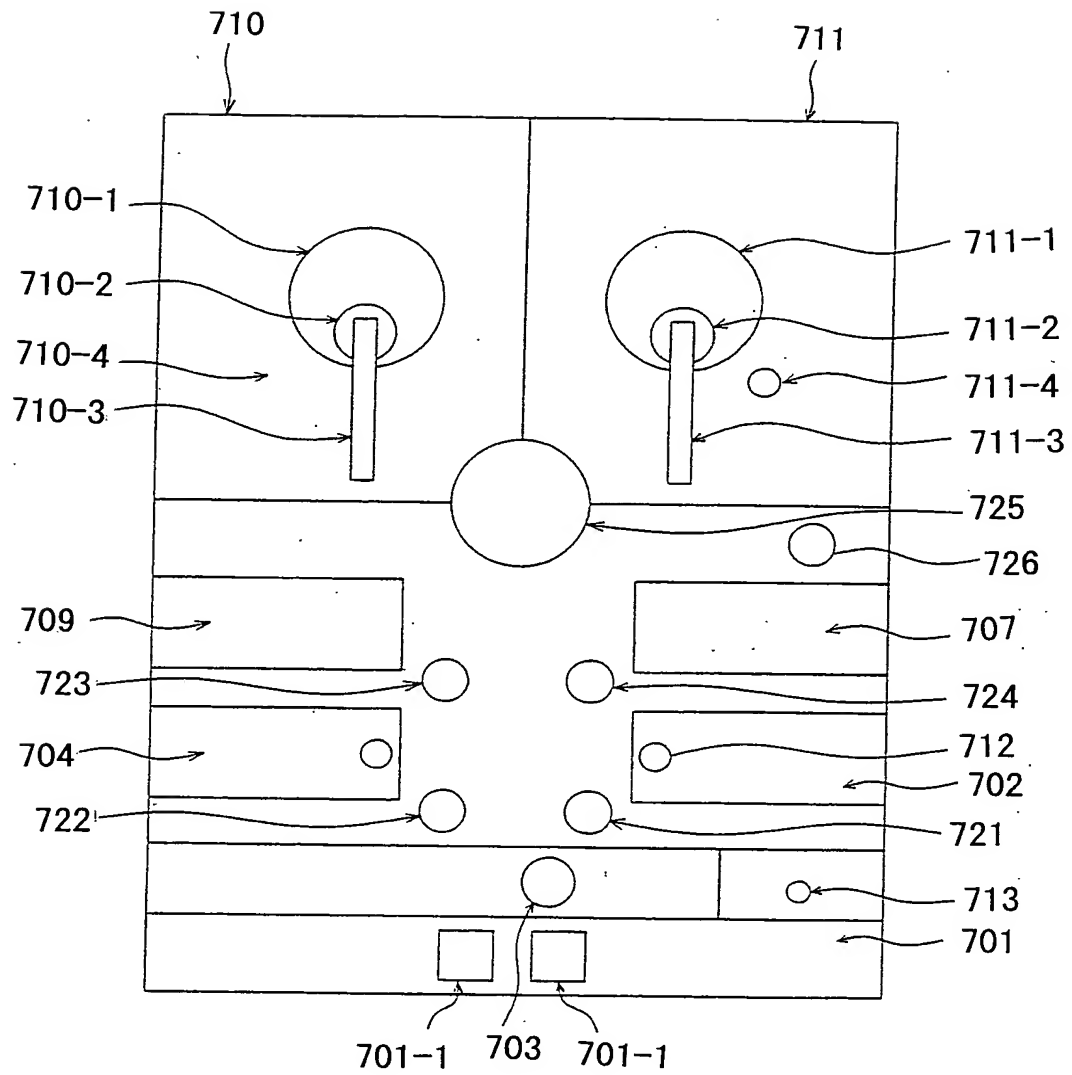


FIG. 24

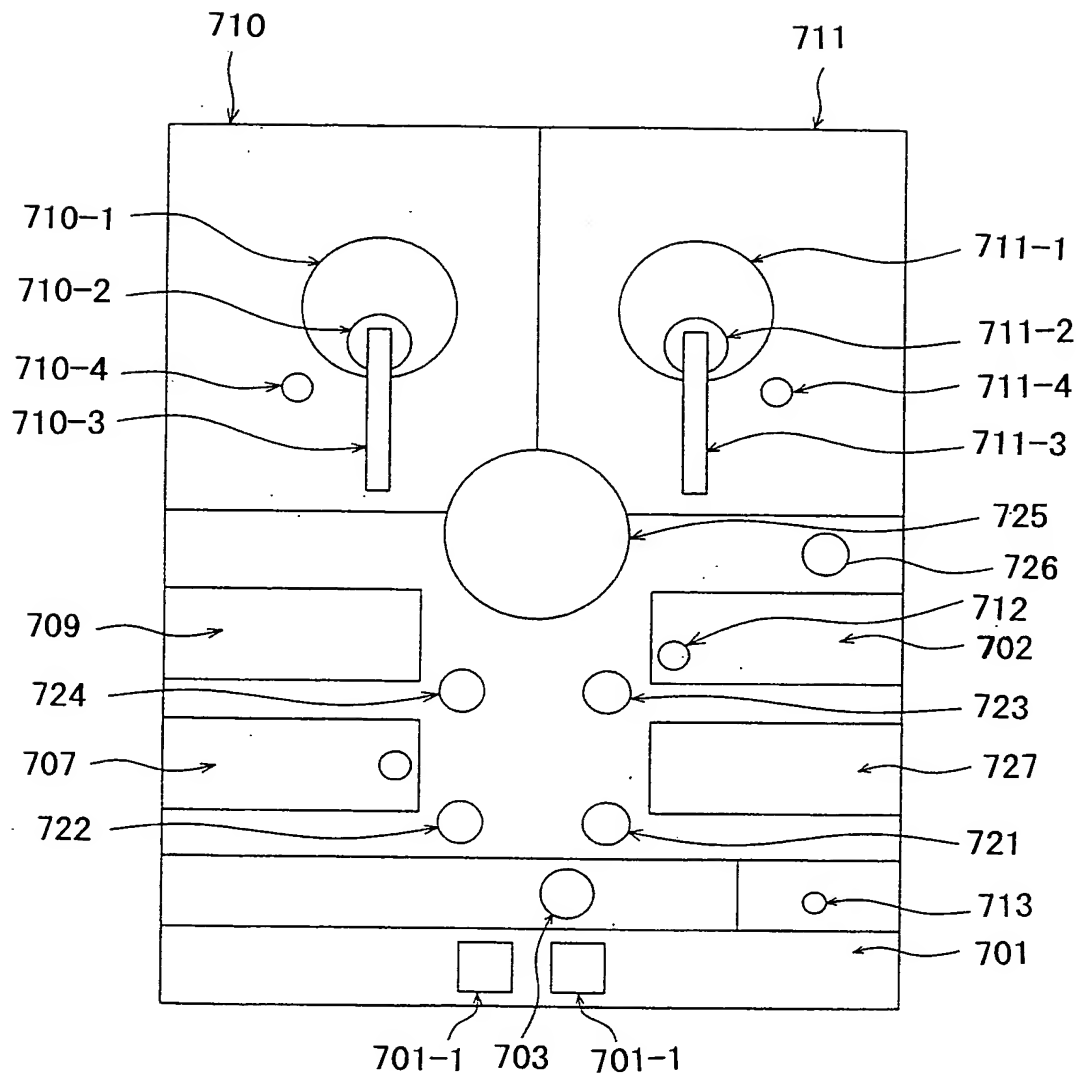


FIG. 25

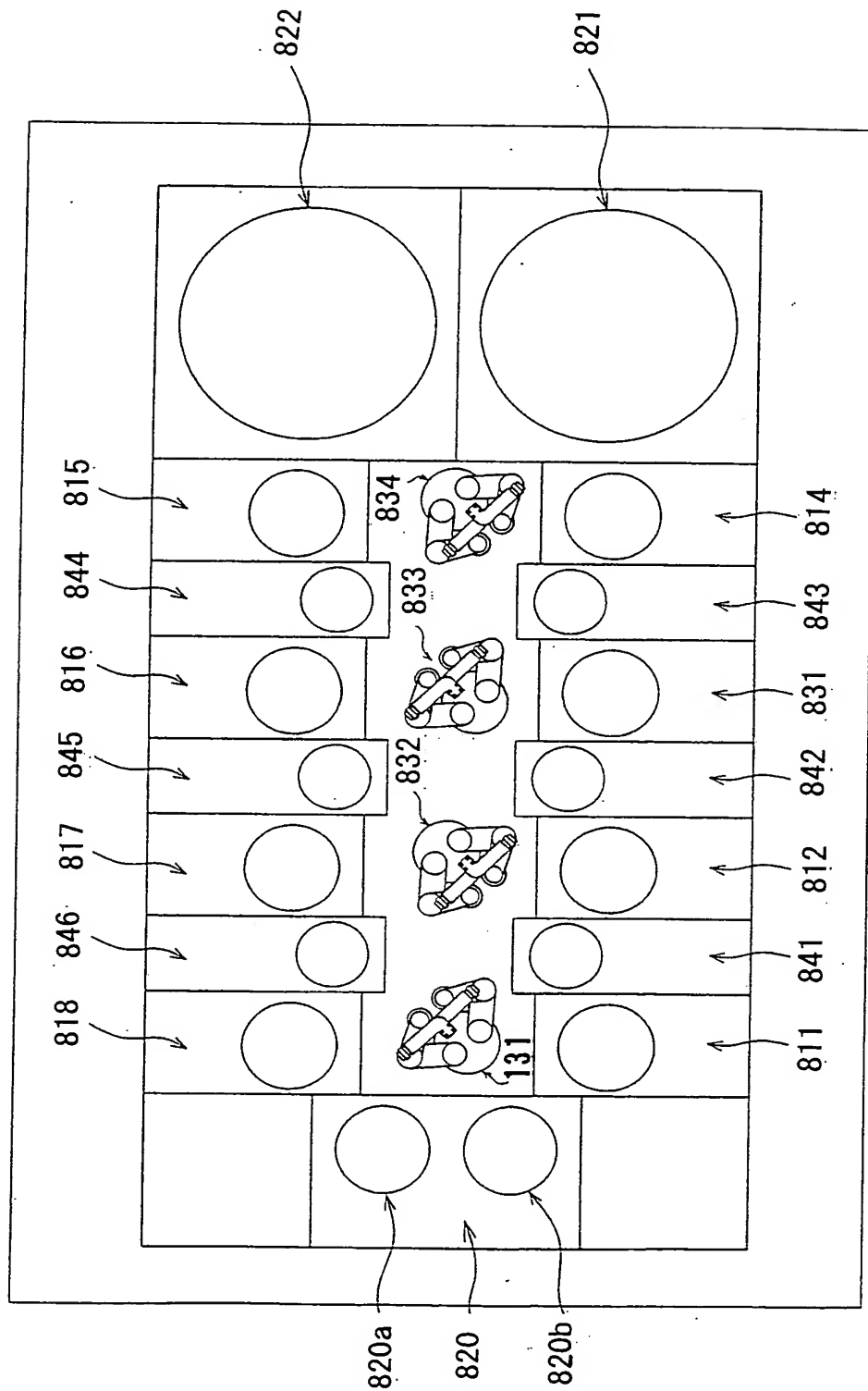


FIG. 26

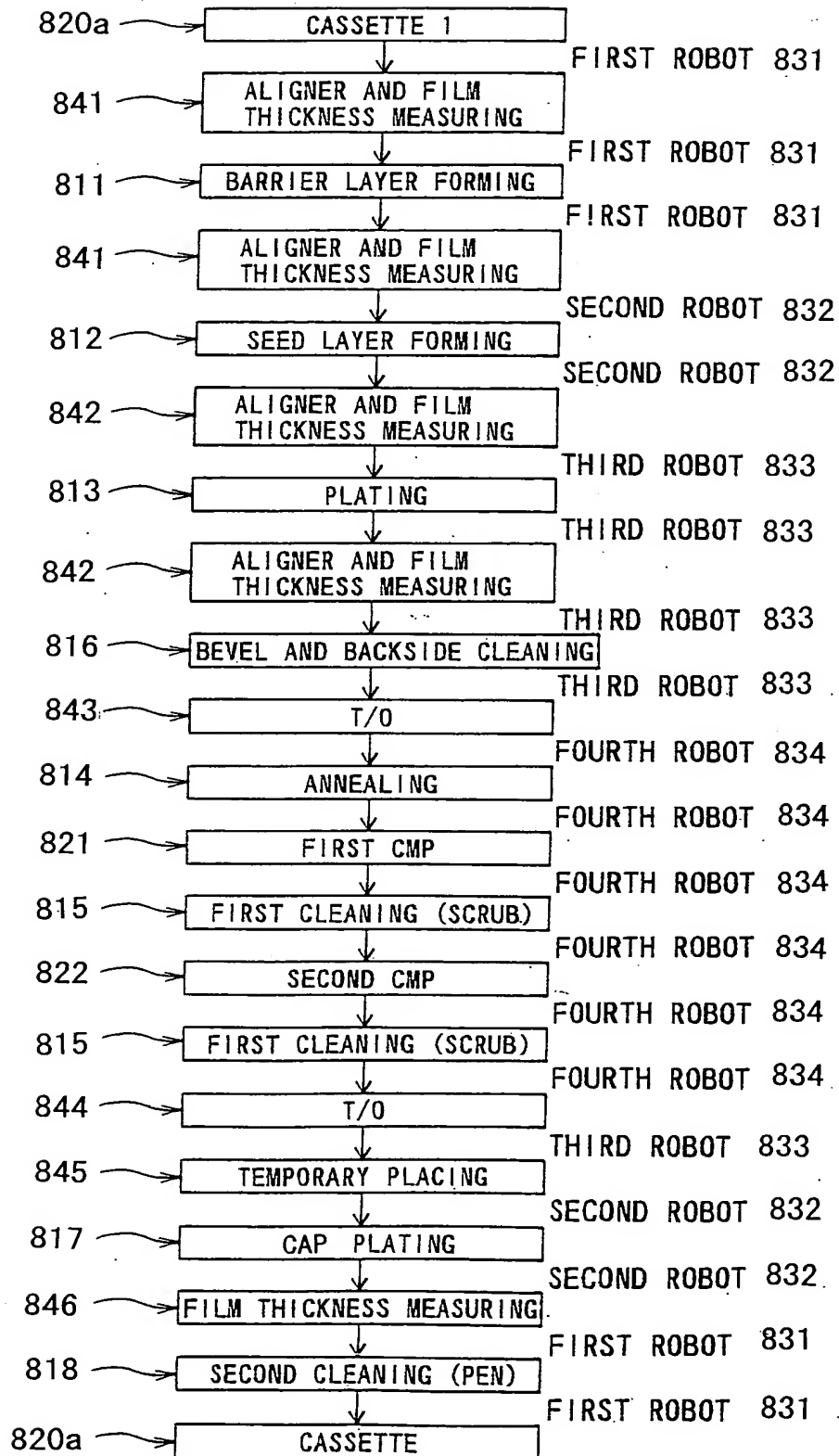


FIG. 27

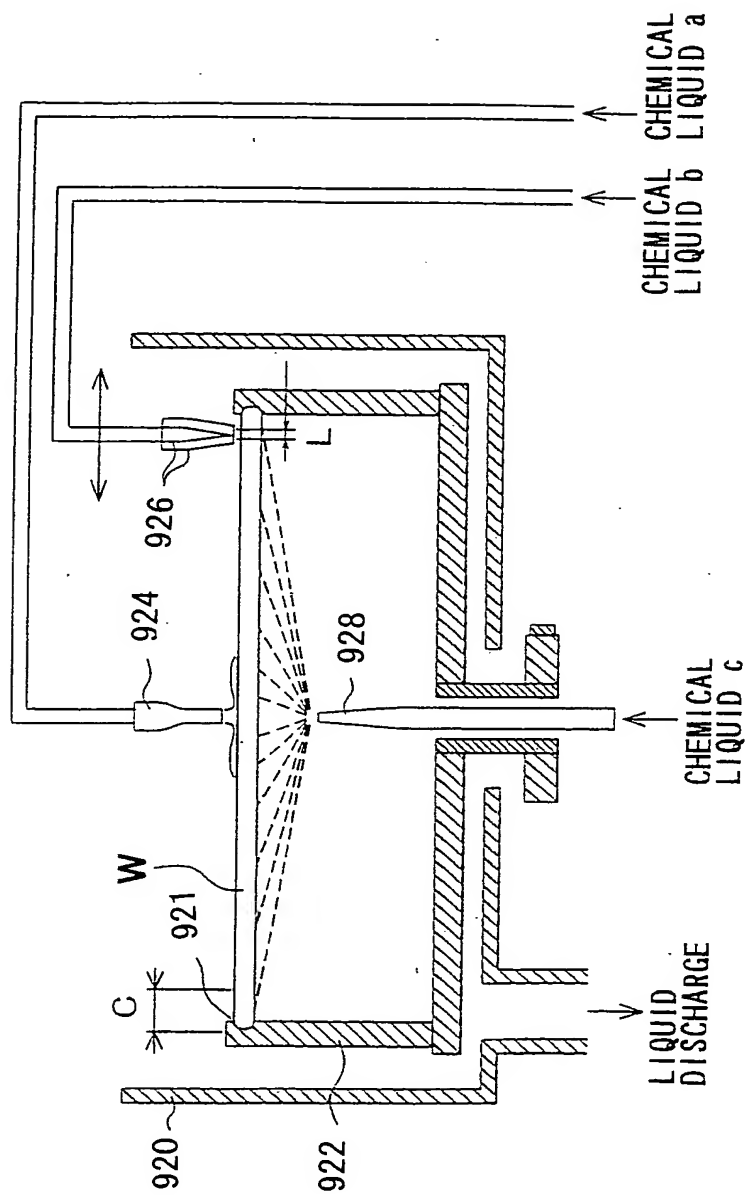


FIG. 28

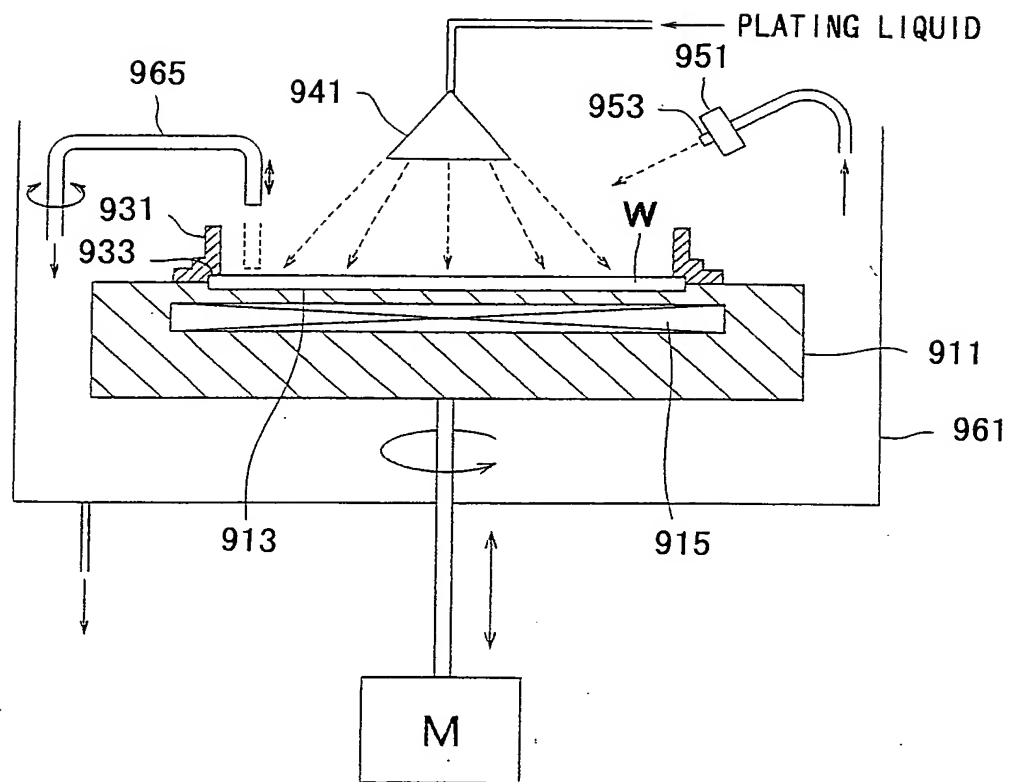


FIG. 29

